REMARKS

Claims 1-7, 9-19, and 21-22 are currently pending. Claims 1, 4, 9, 13, 14, and 17 are herein amended. Claims 8 and 20 are herein cancelled. Claims 21-22 are new.

The Examiner's indication of allowable subject matter is noted with appreciation, as is the Examiner's acknowledgement of the information disclosure statement filed by the Applicant on February 12, 2004.

Claims 1-7 and 14-19 were rejected under 35 U.S.C. § 102(b) as being anticipated by Fafard (U.S. Patent No. 6,239,449).

The Applicant traverses this rejection. In addition, the Applicant has amended the claims to more distinctly define the claimed invention.

In order for Fafard to anticipate the claimed invention, Fafard must disclose or otherwise suggest each and every limitation recited in the claims. MPEP § 2131. Fafard fails to satisfy this standard.

The Applicant's Independent **claim 1** recites, in part: "A quantum dot infrared photodetector focal plane array (QDIP FPA) for generating infrared images, the device comprising: ... a read-out circuit that is electrically coupled to each of the metal contacts and adapted to correlate electrical signals produced by the doped quantum dot layers to intensity of sensed light, thereby allowing for the generation of infrared images." Independent **claim 14** recites, in part: "A method of manufacturing a quantum dot infrared photodetector focal plane array (QDIP FPA) device for generating infrared images, the method comprising: ... bump-bonding a read-out circuit to the grown structure, so as to enable electrical signals produced by the doped quantum dot layers to be correlated to intensity of sensed light, thereby allowing for the generation of infrared images." An example read-out circuit is shown in the Applicant's Figures 3c and 4.

The Examiner cites the bias voltage 34 of Fafard as disclosing a read-out circuit that enable electrical signals produced by the doped quantum dot layers to be correlated to intensity of sensed light, thereby allowing for the generation of infrared images. The Applicant respectfully submits that this bias voltage 34 does not represent a read-out circuit as claimed by the Applicant. In more detail, Fafard discloses: "An electric field 46 can be applied to the

photodetector by applying a bias [34] across the emitter 6 and the collector 30 (FIG. 1), to assist with the photocarrier flow 48 and the tunneling across the barriers due to the electric field 46." (col. 5, lines 55-56; col. 8, lines 14-18; Figures 1 and 2). Thus, the bias voltage 34 simply enables photocarrier flow 48 when light impinges on the photodetector. This photocarrier flow 48 is an electrical signal output by the photodetector that can be used to indicate detection of the light.

To that end, note that the Applicant claims a complementary biasing scheme in new claim 21, which is dependent from claim 1. Such a biasing scheme is also recited in the Applicant's original claim 13. Further note that this biasing scheme is in addition to the also claimed read-out circuit, which is configured to correlate the electrical signals produced by the doped quantum dot layers to intensity of sensed light, thereby allowing for the generation of infrared images. Thus, the bias voltage and read-out circuit are distinct from one another. As such, the Applicant respectfully submits that Fafard's bias voltage 34 fails to disclose a read-out circuit as recited in claims 1-7 and 14-19, and therefore cannot anticipate those claims.

In any case, the Applicant has amended independent claim 1 to include the limitations of dependent claim 8, and has amended independent claim 14 to include the limitations of dependent claim 20. The Examiner indicated that such amendments would place these claims in condition for allowance.

For at least these reasons, the Applicant respectfully requests the Examiner to withdraw this rejection.

Claims 9-10 and 12-13 were rejected under 35 U.S.C. § 102(b) as being anticipated by Masalkar (U.S. Patent No. 6,445,000).

The Applicant traverses this rejection. In addition, the Applicant has amended the claims to more distinctly define the claimed invention.

As a preliminary matter, Masalkar has a publication date of September 3, 2002, which is less than one year prior to the Applicant's filing date of July 25, 2003. Thus, the Applicant assumes that the Examiner intended to apply Masalkar under 35 U.S.C. § 102(e). To that end, the Applicant does not concede that Masalkar has an effective date that is prior to the Applicant's date of invention, and the Applicant reserves the right to swear behind the Masalkar under 37 CFR 1.131.

In order for Masalkar to anticipate the claimed invention, Masalkar must disclose or otherwise suggest each and every limitation recited in the claims. MPEP § 2131. Masalkar fails to satisfy this standard.

The Applicant's Independent **claim 9** recites, in part: "A quantum dot infrared photodetector focal plane array (QDIP FPA) for generating infrared images, the device comprising: ... a read-out circuit operatively coupled to each of the contact layers, that is adapted to correlate electrical signals produced by the each of the quantum dot epi growths to intensity of sensed light, thereby allowing for the generation of infrared images."

The Examiner cited Figure 1, col. 1, lines 44-53 and col. 8, lines 49-63 of Masalkar as disclosing a read-out circuit adapted to correlate electrical signals produced by the each of the quantum dot epi growths to intensity of sensed light, thereby allowing for the generation of infrared images. The Applicant has reviewed Masalkar and respectfully submits that there is no disclosure on a read-out circuit that is adapted to correlate electrical signals produced by the quantum dot epi growths to intensity of sensed light, as claimed by the Applicant. Figure 1 of Masalkar shows an infrared photodetector. Simply said, there is no read-out circuit shown. Note, however, that there is a bias voltage shown, which is applied between the first electrode 20 and the second electrode 22 so that the first electrode 20 has a negative voltage. (col. 5, lines 14-16). Similarly, col. 1, lines 44-53 describes Figure 11 of Masalkar, which also shows an infrared photodetector with a bias applied. Likewise, col. 8, lines 49-63 describes Figures 9 and 10 of Masalkar, which also show an infrared photodetector with a bias applied. In each of these cases, the Applicant notes that the biases illustrated by Masalkar are not the same as a read-out circuit as claimed by the Applicant (and as previously explained with reference to Fafard). As such, the Applicant respectfully submits that Masalkar fails to disclose a read-out circuit as recited in claims 9-10 and 12-13, and therefore cannot anticipate those claims.

In addition, the Applicant has amended independent claim 9 to more distinctly define the claimed invention. In particular, the first and second stacks of quantum dot epi growths have respective first and second contact layers, and there is at least one common contact layer that is distinct from the first and second contact layers. The read-out circuit is operatively coupled to each of the three or more contact layers. The Examiner has indicated with respect to claims 8 and 20 that such limitations include allowable subject matter.

For at least these reasons, the Applicant respectfully requests the Examiner to withdraw this rejection.

Claim 11 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Masalkar in view of Fafard.

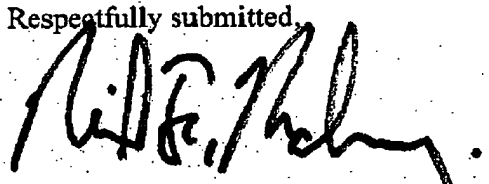
The Applicant traverses this rejection.

As correctly noted by the Examiner, Masalkar fails to disclose a quantum dot infrared photodetector focal plane array (QDIP FPA) for generating infrared images, wherein the first and second quantum dot epi growths are part of a structure formed separately from the read-out circuit, wherein the structure is bump-bonded to the read-out circuit. To correct this deficiency, the Examiner cites Fafard's Figure 1. As previously explained, Figure 1 of Fafard shows a photodetector with bias voltage 34 connected across the emitter 6 and the collector 30. (col. 8, lines 14-18; Figure 1). Also previously explained, biasing of the photodetector device is distinct from a read-out circuit as claimed.

As such, the Applicant respectfully submits that neither Fafard or Masalkar, nor their combination disclose a structure that is bump-bonded to a read-out circuit as recited in claim 11, and respectfully request the Examiner to withdraw this rejection.

The Applicant believes the above amendments and remarks to be fully responsive, thereby placing this application in condition for allowance. Favorable action is solicited. The Examiner is kindly invited to contact the undersigned attorney by telephone, facsimile, or email for quickest resolution, if there are any remaining issues.

Respectfully submitted,



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